

THIS CLASS IS FOR
IGCSE (0580) people only.

O-Levels (4024) can leave.

STATISTICS

- DATA REPRESENTATION:
- 1) Freq Tables
 - 2) Histogram
 - 3) Freq Polygon
 - 4) Cumulative freq.
 - 5) Pictogram

Super easy. {

- 6) Stem and leaf
- ~~7) Box and whisker plots.~~

Now out of syllabus from 2025.

IMP: LEAVES MUST BE SINGLE DIGIT INTEGER.

30 The numbers of people travelling on a certain bus at different times of the day are as follows.

17	5	<u>2</u>	<u>23</u>	16	31	8
22	14	<u>25</u>	<u>35</u>	17	27	12
6	23	<u>19</u>	<u>21</u>	23	8	26

(i) Draw a stem-and-leaf diagram to illustrate the information given above. [3]

(ii) Find the median, the lower quartile, the upper quartile and the interquartile range. [3]

STEM	LEAF
0	2, 5, 6, 8, 8
1	2, 4, 6, 7, 7, 9
2	1, 2, 3, 3, 3, 5, 6, 7
3	1, 5

Key: 3 | 5
means 35

Rule 1: Stem must be Integer (No decimal/fraction)

Rule 2: Leaf must be single digit and in increasing order.

36 The weights in kilograms of 11 bags of sugar and 7 bags of flour are as follows.

Sugar: 1.961 1.983 2.008 2.014 1.968 1.994 2.011 2.017 1.977 1.984 1.989

196

1, 8

key: 196 | 8

197

7

mean 1.968

198

3, 4, 9

199

4

200

8

201

1, 4, 7

NOTE 1

16.5^{th} term means $\left. \begin{array}{l} \rightarrow 16^{\text{th}} \text{ term} \\ \rightarrow 17^{\text{th}} \text{ term} \end{array} \right\} \text{Take average} = \frac{\text{Add}}{2}$

But if: 16.25^{th} term $\rightarrow$ Just take 16^{th} term.
 16.75^{th} term $\rightarrow$ Just take 17^{th} term.

NOTE 2

ONLY CUMULATIVE FREQUENCY

$$\text{Median} = \frac{n}{2}$$

$$\text{UQ} = \frac{3n}{4}$$

$$\text{LQ} = \frac{n}{4}$$

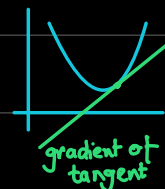
EVERY WHERE ELSE

$$\text{Median} = \left(\frac{n+1}{2} \right)^{\text{th}} \text{ term.}$$

$$\text{UQ} = \frac{3(n+1)}{4}^{\text{th}} \text{ term.}$$

$$\text{LQ} = \frac{(n+1)}{4}^{\text{th}} \text{ term.}$$

DERIVATIVES / DIFFERENTIATION (GRADIENT OF CURVE)

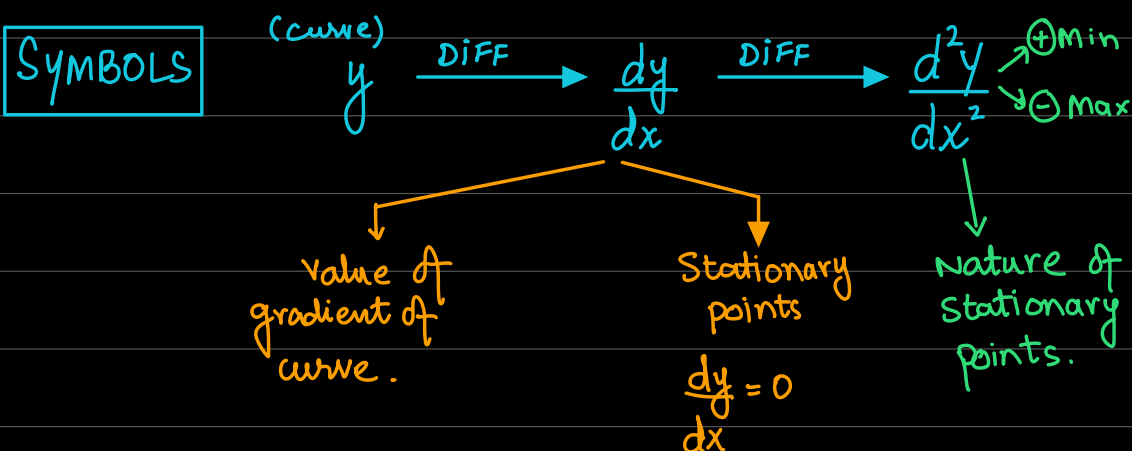


Lets first learn how to derivate:

Base Rule 1	
x	$\xrightarrow{\text{DIFF}} 1$
$2x$	$\longrightarrow 2$
$5x$	$\longrightarrow 5$
$-3x$	$\longrightarrow -3$

Base Rule 2	
Alone constant	$\rightarrow 0$
5	$\rightarrow 0$
-2	$\rightarrow 0$
4	$\rightarrow 0$

POWER RULE: $x^n \longrightarrow nx^{n-1}$
 $x^7 \longrightarrow 7x^6$



TURNING POINT
STATIONARY POINT
MAX/MIN POINTS



Q: $y = x^3 - 2x^2 + 5$

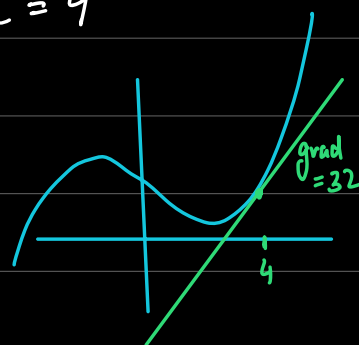
(i) Find $\frac{dy}{dx} = 3x^2 - 4x + 0$

$$\frac{dy}{dx} = 3x^2 - 4x$$

(ii) Find gradient of curve at $x = 4$

$$\frac{dy}{dx} = 3x^2 - 4x$$

$$\frac{dy}{dx} = 3(4)^2 - 4(4) = 32$$



(iii) Find coordinates of two stationary points.

$$\frac{dy}{dx} = 0$$

$$3x^2 - 4x = 0$$

$$x(3x - 4) = 0$$

$$x = 0$$

$$x = 0$$

$$, \quad 3x - 4 = 0$$

$$x = \frac{4}{3}$$

$$y = x^3 - 2x^2 + 5$$

$$y = 0^3 - 2(0)^2 + 5$$

$$y = 5$$

$$(0, 5)$$

$$y = x^3 - 2x^2 + 5$$

$$y = \left(\frac{4}{3}\right)^3 - 2\left(\frac{4}{3}\right)^2 + 5$$

$$\left(\frac{4}{3}, 3.814\right)$$

(iii) Find $\frac{d^2y}{dx^2}$ and determine nature of each

stationary point:

(curve) $y = x^3 - 2x^2 + 5$

Diff

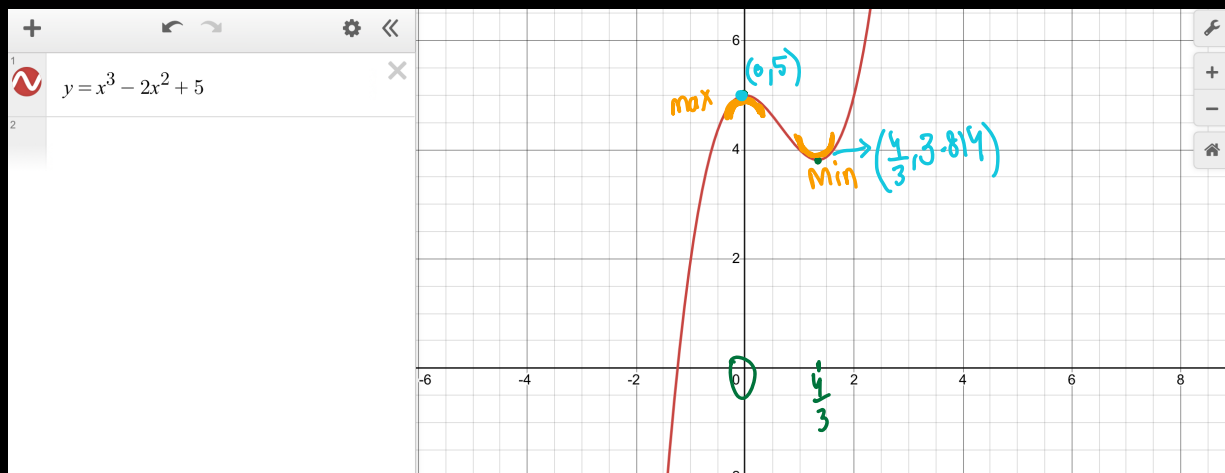
$$\frac{dy}{dx} = 3x^2 - 4x$$

DIFF

$$\frac{d^2y}{dx^2} = 6x - 4$$

$$x = 0, \frac{d^2y}{dx^2} = 6(0) - 4 = -4 \text{ (MAX)}$$

$$x = \frac{4}{3}, \frac{d^2y}{dx^2} = 6\left(\frac{4}{3}\right) - 4 = +4 \text{ (MIN)}$$



TRIGONOMETRY

1. EQUATION SOLVING

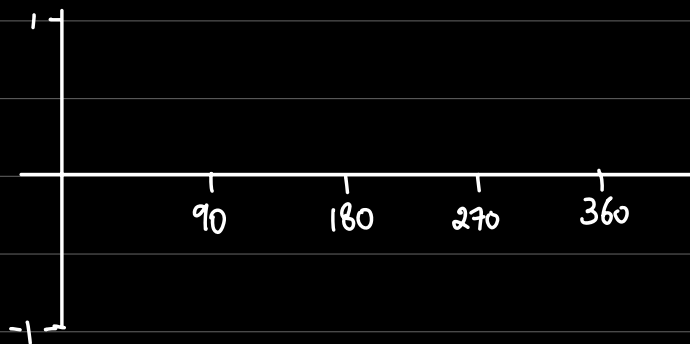
1) $\sin x = \frac{1}{2}$ $0 < x < 360$

S	A
T	C
Ans = $180 - \alpha$	Ans = α
Ans = $180 + \alpha$	Ans = $360 - \alpha$

$$2) \quad \tan x = -1 \quad 0 < x < 360$$

$$3) \quad 5 \tan x = 1 \quad 0 \leq x \leq 360$$

2- TRIG GRAPHS



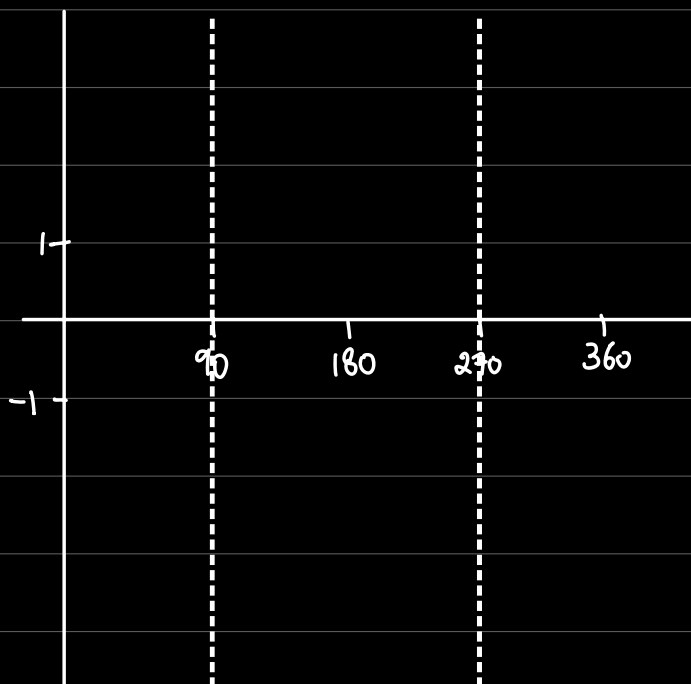
$\sin x$

0 1 0 -1



$\cos x$

1 0 -1 0



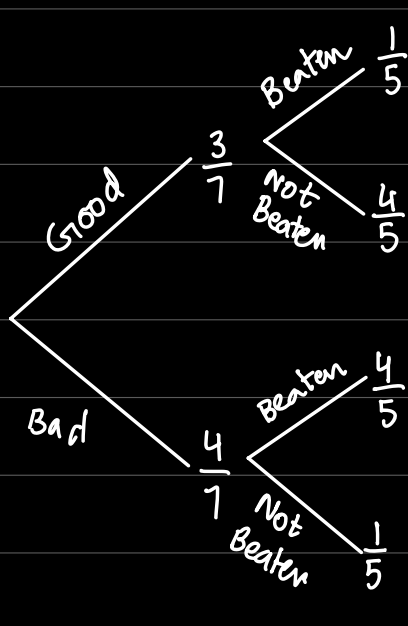
$\tan x$

CONDITIONAL PROBABILITY

you will have two events: $A = \text{First}$
 $B = \text{Second}$

Conditional Probability is when we know the result of second event, find Probability of First event.

$$P(A \text{ given } B \text{ has happened}) = \frac{P(A \text{ and } B \text{ together})}{P(B)}$$



Q: Given that Ali gets beaten at home, what is probability that he had a bad result:

PAPER TECHNIQUE

P2

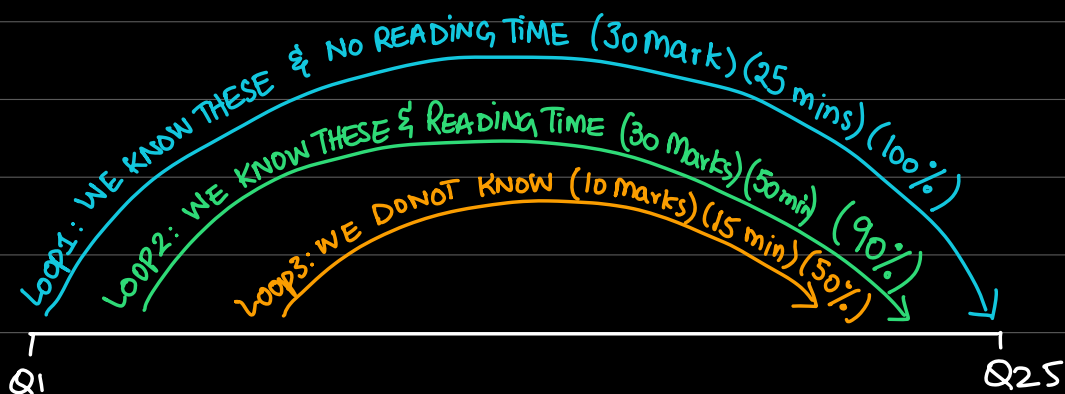


Loop system is same.

Time management is different.

P4

Same as for
O Levels.



Loop 1	WE KNOW THESE NO READING TIME	25 min	30 marks	100%	30
Loop 2	WE KNOW THESE READING TIME	50 min	30 marks	90%	27
Loop 3	WE DO NOT KNOW THESE	15 min	10 marks	50%	5
					62 MARKS

P2 - O LEVELS

P4 - IGCSE

Time : 2h 30 mins

About 10 Questions .

Approx. each question has weightage of 10 Marks .

	Loop 1	Loop 2	
EASY - MEDIUM 7 QUESTIONS	5-7 marks	2 Marks	$9 \times 7 = 63$
Harder Question 3 Questions	2-3 marks	1 Marks	$4 \times 3 = 12$

$$\text{TOTAL} = 63 + 12 = 75$$

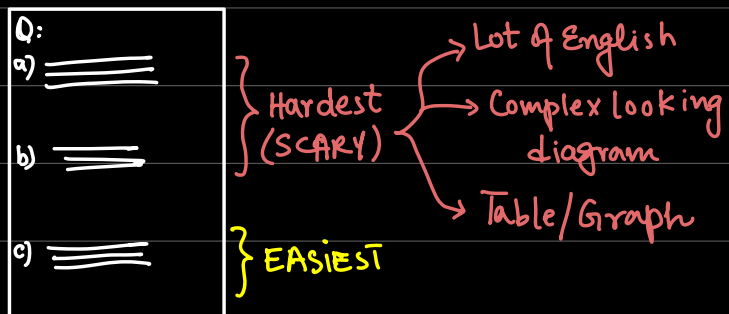
P2

There is no time issue

ENERGY CRISIS

GOLDEN RULE 1 READ PAPER SLOWLY

GOLDEN RULE 2:



P2 examiners hide the easiest parts
beneath the hardest parts.

HOW LONG CAN YOU STAY STUCK AT A PART

No of min = No of marks.